

What is claimed is:

1 1. A dynamic proxy server apparatus for, substituting for one of  
2 a plurality of client terminal apparatuses, obtaining a resource  
3 from a server apparatus, the dynamic proxy server apparatus  
4 comprising:

5 a request receiving means for receiving a plurality of  
6 requests from at least one of the plurality of client terminal  
7 apparatuses;

8 a divisional request creating means for sequentially  
9 creating a plurality of divisional requests from each received  
10 request, each divisional request specifying a partial server  
11 resource constituting a server resource which is stored in the  
12 server apparatus;

13 a request transmitting means for transmitting the  
14 created divisional requests to the server apparatus; and

15 a managing means for managing a margin time for each of  
16 the received requests, the margin time being a result of  
17 subtracting (a) a time required for transmitting data of a given  
18 size to the client terminal apparatus, from (b) a time required for  
19 receiving the data of the given size from the server apparatus,  
20 wherein

21 the divisional request creating means creates the  
22 divisional requests so that a resource for a request with the  
23 shortest margin time among the received requests is preferentially  
24 obtained in accordance with the margin times managed by the



25 managing means.

1 2. The dynamic proxy server apparatus of Claim 1, wherein

2 the managing means further manages wait times which each  
3 are a time between an instant when a partial server resource  
4 corresponding to a divisional request is obtained from the server  
5 apparatus and an instant when the next divisional request is  
6 created,

7 the divisional request creating means changes size of  
8 the partial server resources in accordance with wait times, and

9 the managing means updates the wait times so that a  
10 resource for a request with the shortest margin time is  
11 preferentially obtained.

1 3. The dynamic proxy server apparatus of Claim 2, wherein

2 the divisional request creating means increases size of  
3 the partial server resources as the wait times decrease, and  
4 decreases size of the partial server resources as the wait times  
5 increase.

1 4. The dynamic proxy server apparatus of Claim 3, wherein

2 the managing means assigns the wait times to the  
3 requests so that the wait times are proportionate to the margin  
4 times for the requests.



1 5. The dynamic proxy server apparatus of Claim 4 further  
2 comprising:

3 a response receiving means for receiving responses from  
4 the server apparatus, the responses being partial server resources  
5 constituting a server resource;

6 a buffer storage means for storing the received  
7 responses sequentially in a buffer;

8 a divisional response creating means for creating  
9 divisional responses sequentially from the responses stored in the  
10 buffer, each divisional response being a partial proxy resource  
11 constituting a proxy resource which is composed of the responses  
12 stored in the buffer; and

13 a response transmitting means for transmitting the  
14 divisional responses to the client terminal apparatus, wherein

15 the divisional response creating means creates the  
16 divisional responses so that a resource with the longest margin  
17 time is preferentially transmitted in accordance with the margin  
18 times managed by the managing means.

1 6. The dynamic proxy server apparatus of Claim 5, wherein

2 the divisional response creating means changes size of  
3 the partial proxy resources in accordance with wait times, and

4 the managing means updates the wait times so that a  
5 resource with the longest margin time is preferentially  
6 transmitted.



1 7. The dynamic proxy server apparatus of Claim 6, wherein  
2 the divisional response creating means decreases size of  
3 the partial proxy resources as the wait times decrease, and  
4 increases size of the partial proxy resources as the wait times  
5 increase.

1 8. The dynamic proxy server apparatus of Claim 7, wherein  
2 the divisional response creating means creates a  
3 divisional response when size of a proxy resource is equal to or  
4 higher than a threshold value, and when the size is lower than the  
5 threshold value, waits for the size to reach the threshold value  
6 before creating a divisional response.

1 9. The dynamic proxy server apparatus of Claim 2, wherein  
2 the managing means assigns the wait times to the  
3 requests so that the wait times are proportionate to the margin  
4 times for the requests.

1 10. The dynamic proxy server apparatus of Claim 5, wherein  
2 the divisional response creating means creates a  
3 divisional response when size of a proxy resource is equal to or  
4 higher than a threshold value, and when the size is lower than the  
5 threshold value, waits for the size to reach the threshold value  
6 before creating a divisional response.



1 11. The dynamic proxy server apparatus of Claim 1 further  
2 comprising:

3 a response receiving means for receiving responses from  
4 the server apparatus, the responses being partial server resources  
5 constituting a server resource;

6 a buffer storage means for storing the received  
7 responses sequentially in a buffer;

8 a divisional response creating means for creating  
9 divisional responses sequentially from the responses stored in the  
10 buffer, each divisional response being a partial proxy resource  
11 constituting a proxy resource which is composed of the responses  
12 stored in the buffer; and

13 a response transmitting means for transmitting the  
14 divisional responses to the client terminal apparatus, wherein

15 the divisional response creating means creates the  
16 divisional responses so that a resource with the longest margin  
17 time is preferentially transmitted in accordance with the margin  
18 times managed by the managing means.

1 12. The dynamic proxy server apparatus of Claim 11, wherein

2 the divisional response creating means creates a  
3 divisional response when size of a proxy resource is equal to or  
4 higher than a threshold value, and when the size is lower than the  
5 threshold value, waits for the size to reach the threshold value



6 before creating a divisional response.

1 13. A dynamic proxy server apparatus for, substituting for one of  
2 a plurality of client terminal apparatuses, obtaining a resource  
3 from a server apparatus, the dynamic proxy server apparatus  
4 comprising:

5 a response receiving means for receiving responses from  
6 the server apparatus, the responses being partial server resources  
7 constituting a server resource;

8 a buffer storage means for storing the received  
9 responses sequentially in a buffer;

10 a divisional response creating means for creating  
11 divisional responses sequentially from the responses stored in the  
12 buffer, each divisional response being a partial proxy resource  
13 constituting a proxy resource which is composed of the responses  
14 stored in the buffer; and

15 a response transmitting means for transmitting the  
16 divisional responses to the client terminal apparatus, wherein

17 the divisional response creating means creates a  
18 divisional response when size of a proxy resource is equal to or  
19 higher than a threshold value, and when the size is lower than the  
20 threshold value, waits for the size to reach the threshold value  
21 before creating a divisional response.

1 14. A dynamic proxy service program for, substituting for one of



2 a plurality of client terminal apparatuses, obtaining a resource  
3 from a server apparatus, the dynamic proxy service program  
4 comprising:

5 a request receiving step for receiving a plurality of  
6 requests from at least one of the plurality of client terminal  
7 apparatuses;

8 a divisional request creating step for sequentially  
9 creating a plurality of divisional requests from each received  
10 request, each divisional request specifying a partial server  
11 resource constituting a server resource which is stored in the  
12 server apparatus;

13 a request transmitting step for transmitting the created  
14 divisional requests to the server apparatus; and

15 a managing step for managing a margin time for each of  
16 the received requests, the margin time being a result of  
17 subtracting (a) a time required for transmitting data of a given  
18 size to the client terminal apparatus, from (b) a time required for  
19 receiving the data of the given size from the server apparatus,  
20 wherein

21 the divisional request creating step creates the  
22 divisional requests so that a resource for a request with the  
23 shortest margin time among the received requests is preferentially  
24 obtained in accordance with the margin times managed by the  
25 managing step.



1 15. The dynamic proxy service program of Claim 14, wherein  
2 the managing step further manages wait times which each  
3 are a time between an instant when a partial server resource  
4 corresponding to a divisional request is obtained from the server  
5 apparatus and an instant when the next divisional request is  
6 created,  
7 the divisional request creating step changes size of the  
8 partial server resources in accordance with wait times, and  
9 the managing step updates the wait times so that a  
10 resource for a request with the shortest margin time is  
11 preferentially obtained.

1 16. The dynamic proxy service program of Claim 15, wherein  
2 the divisional request creating step increases size of  
3 the partial server resources as the wait times decrease, and  
4 decreases size of the partial server resources as the wait times  
5 increase.

1 17. The dynamic proxy service program of Claim 16, wherein  
2 the managing step assigns the wait times to the requests  
3 so that the wait times are proportionate to the margin times for  
4 the requests.

1 18. The dynamic proxy service program of Claim 17 further  
2 comprising:



3 a response receiving step for receiving responses from  
4 the server apparatus, the responses being partial server resources  
5 constituting a server resource;

6 a buffer storage step for storing the received responses  
7 sequentially in a buffer;

8 a divisional response creating step for creating  
9 divisional responses sequentially from the responses stored in the  
10 buffer, each divisional response being a partial proxy resource  
11 constituting a proxy resource which is composed of the responses  
12 stored in the buffer; and

13 a response transmitting step for transmitting the  
14 divisional responses to the client terminal apparatus, wherein  
15 the divisional response creating step creates the  
16 divisional responses so that a resource with the longest margin  
17 time is preferentially transmitted in accordance with the margin  
18 times managed by the managing step.

1 19. The dynamic proxy service program of Claim 18, wherein  
2 the divisional response creating step changes size of  
3 the partial proxy resources in accordance with wait times, and  
4 the managing step updates the wait times so that a  
5 resource with the longest margin time is preferentially  
6 transmitted.

1 20. The dynamic proxy service program of Claim 19, wherein



2           the divisional response creating step decreases size of  
3 the proxy resources as the wait times decrease, and increases size  
4 of the proxy resources as the wait times increase.

1 21. The dynamic proxy service program of Claim 20, wherein  
2           the divisional response creating step creates a  
3 divisional response when size of a proxy resource is equal to or  
4 higher than a threshold value, and when the size is lower than the  
5 threshold value, waits for the size to reach the threshold value  
6 before creating a divisional response.

1 22. The dynamic proxy service program of Claim 15, wherein  
2           the managing step assigns the wait times to the requests  
3 so that the wait times are proportionate to the margin times for  
4 the requests.

1 23. The dynamic proxy service program of Claim 18, wherein  
2           the divisional response creating step creates a  
3 divisional response when size of a proxy resource is equal to or  
4 higher than a threshold value, and when the size is lower than the  
5 threshold value, waits for the size to reach the threshold value  
6 before creating a divisional response.

1 24. The dynamic proxy service program of Claim 14 further  
2 comprising:



3. a response receiving step for receiving responses from  
4 the server apparatus, the responses being partial server resources  
5 constituting a server resource;

6 a buffer storage step for storing the received responses  
7 sequentially in a buffer;

8 a divisional response creating step for creating  
9 divisional responses sequentially from the responses stored in the  
10 buffer, each divisional response being a partial proxy resource  
11 constituting a proxy resource which is composed of the responses  
12 stored in the buffer; and

13 a response transmitting step for transmitting the  
14 divisional responses to the client terminal apparatus, wherein

15 the divisional response creating step creates the  
16 divisional responses so that a resource with the longest margin  
17 time is preferentially transmitted in accordance with the margin  
18 times managed by the managing step.

1 25. The dynamic proxy service program of Claim 24, wherein

2 the divisional response creating step creates a  
3 divisional response when size of a proxy resource is equal to or  
4 higher than a threshold value, and when the size is lower than the  
5 threshold value, waits for the size to reach the threshold value  
6 before creating a divisional response.

1 26. A dynamic proxy service program for, substituting for one of



2 a plurality of client terminal apparatuses, obtaining a resource  
3 from a server apparatus, the dynamic proxy service program  
4 comprising:

5 a response receiving step for receiving responses from  
6 the server apparatus, the responses being partial server resources  
7 constituting a server resource;

8 a buffer storage step for storing the received responses  
9 sequentially in a buffer;

10 a divisional response creating step for creating  
11 divisional responses sequentially from the responses stored in the  
12 buffer, each divisional response being a partial proxy resource  
13 constituting a proxy resource which is composed of the responses  
14 stored in the buffer; and

15 a response transmitting step for transmitting the  
16 divisional responses to the client terminal apparatus, wherein

17 the divisional response creating step creates a  
18 divisional response when size of a proxy resource is equal to or  
19 higher than a threshold value, and when the size is lower than the  
20 threshold value, waits for the size to reach the threshold value  
21 before creating a divisional response.

1 27. A computer readable recording medium recording a dynamic proxy  
2 service program for, substituting for one of a plurality of client  
3 terminal apparatuses, obtaining a resource from a server apparatus,  
4 the dynamic proxy service program comprising:



5           a request receiving step for receiving a plurality of  
6 requests from at least one of the plurality of client terminal  
7 apparatuses;

8           a divisional request creating step for sequentially  
9 creating a plurality of divisional requests from each received  
10 request, each divisional request specifying a partial server  
11 resource constituting a server resource which is stored in the  
12 server apparatus;

13           a request transmitting step for transmitting the created  
14 divisional requests to the server apparatus; and

15           a managing step for managing a margin time for each of  
16 the received requests, the margin time being a result of  
17 subtracting (a) a time required for transmitting data of a given  
18 size to the client terminal apparatus, from (b) a time required for  
19 receiving the data of the given size from the server apparatus,  
20 wherein

21           the divisional request creating step creates the  
22 divisional requests so that a resource for a request with the  
23 shortest margin time among the received requests is preferentially  
24 obtained in accordance with the margin times managed by the  
25 managing step.

1   28. The recording medium of Claim 27, wherein

2           the managing step further manages wait times which each  
3 are a time between an instant when a partial server resource



4 corresponding to a divisional request is obtained from the server  
5 apparatus and an instant when the next divisional request is  
6 created,

7 the divisional request creating step changes size of the  
8 partial server resources in accordance with wait times, and

9 the managing step updates the wait times so that a  
10 resource for a request with the shortest margin time is  
11 preferentially obtained.

1 29. The recording medium of Claim 28, wherein

2 the divisional request creating step increases size of  
3 the partial server resources as the wait times decrease, and  
4 decreases size of the partial server resources as the wait times  
5 increase.

1 30. The recording medium of Claim 29, wherein

2 the managing step assigns the wait times to the requests  
3 so that the wait times are proportionate to the margin times for  
4 the requests.

1 31. The recording medium of Claim 30 further comprising:

2 a response receiving step for receiving responses from  
3 the server apparatus, the responses being partial server resources  
4 constituting a server resource;

5 a buffer storage step for storing the received responses



6 sequentially in a buffer;  
7 a divisional response creating step for creating  
8 divisional responses sequentially from the responses stored in the  
9 buffer, each divisional response being a partial proxy resource  
10 constituting a proxy resource which is composed of the responses  
11 stored in the buffer; and  
12 a response transmitting step for transmitting the  
13 divisional responses to the client terminal apparatus, wherein  
14 the divisional response creating step creates the  
15 divisional responses so that a resource with the longest margin  
16 time is preferentially transmitted in accordance with the margin  
17 times managed by the managing step.

1 32. The recording medium of Claim 31, wherein  
2 the divisional response creating step changes size of  
3 the partial proxy resources in accordance with wait times, and  
4 the managing step updates the wait times so that a  
5 resource with the longest margin time is preferentially  
6 transmitted.

1 33. The recording medium of Claim 32, wherein  
2 the divisional response creating step decreases size of  
3 the proxy resources as the wait times decrease, and increases size  
4 of the proxy resources as the wait times increase.



1 34. The recording medium of Claim 33, wherein  
2 the divisional response creating step creates a  
3 divisional response when size of a proxy resource is equal to or  
4 higher than a threshold value, and when the size is lower than the  
5 threshold value, waits for the size to reach the threshold value  
6 before creating a divisional response.

1 35. The recording medium of Claim 28, wherein  
2 the managing step assigns the wait times to the requests  
3 so that the wait times are proportionate to the margin times for  
4 the requests.

1 36. The recording medium of Claim 31, wherein  
2 the divisional response creating step creates a  
3 divisional response when size of a proxy resource is equal to or  
4 higher than a threshold value, and when the size is lower than the  
5 threshold value, waits for the size to reach the threshold value  
6 before creating a divisional response.

1 37. The recording medium of Claim 27 further comprising:  
2 a response receiving step for receiving responses from  
3 the server apparatus, the responses being partial server resources  
4 constituting a server resource;  
5 a buffer storage step for storing the received responses  
6 sequentially in a buffer;



7           a divisional response creating step for creating  
8 divisional responses sequentially from the responses stored in the  
9 buffer, each divisional response being a partial proxy resource  
10 constituting a proxy resource which is composed of the responses  
11 stored in the buffer; and

12           a response transmitting step for transmitting the  
13 divisional responses to the client terminal apparatus, wherein

14           the divisional response creating step creates the  
15 divisional responses so that a resource with the longest margin  
16 time is preferentially transmitted in accordance with the margin  
17 times managed by the managing step.

1   38. The recording medium of Claim 37, wherein

2           the divisional response creating step creates a  
3 divisional response when size of a proxy resource is equal to or  
4 higher than a threshold value, and when the size is lower than the  
5 threshold value, waits for the size to reach the threshold value  
6 before creating a divisional response.

1   39. A computer readable recording medium recording a dynamic proxy  
2 service program for, substituting for one of a plurality of client  
3 terminal apparatuses, obtaining a resource from a server apparatus,  
4 the dynamic proxy service program comprising:

5           a response receiving step for receiving responses from  
6 the server apparatus, the responses being partial server resources



7 constituting a server resource;  
8 a buffer storage step for storing the received responses  
9 sequentially in a buffer;  
10 a divisional response creating step for creating  
11 divisional responses sequentially from the responses stored in the  
12 buffer, each divisional response being a partial proxy resource  
13 constituting a proxy resource which is composed of the responses  
14 stored in the buffer; and  
15 a response transmitting step for transmitting the  
16 divisional responses to the client terminal apparatus, wherein  
17 the divisional response creating step creates a  
18 divisional response when size of a proxy resource is equal to or  
19 higher than a threshold value, and when the size is lower than the  
20 threshold value, waits for the size to reach the threshold value  
21 before creating a divisional response.